

Montilaira uta (Chamberlin).

Fig. 11. Tibia of palpus of male, dorsal view.

Montilaira perplexa (Keyserling).

Fig. 12. Tibia of palpus of male, dorsal view.

Microneta heathi n. sp.

Fig. 13. Lateral view of abdomen, with epigynum, of female

AN ANNOTATED LIST OF THE CICADAS OF COLORADO WITH DESCRIPTION OF A NEW SPECIES.

BY WM. T. DAVIS,

NEW BRIGHTON, STATEN ISLAND, N. Y.

In the summer of 1919 the American Museum of Natural History sent a collecting party to Colorado, and among the insects secured by Dr. Frank E. Lutz and his two companions Messrs. Herbert F. Schwarz and Pearce Bailey, Jr., were twelve species of Cicadas. Dr. Lutz has kindly turned these over to me for determination. In the summer of 1920 Dr. Lutz secured an additional species. Prof. Theodore D. A. Cockerell has sent me several species collected in the state, one of which is here described as new, and has also furnished the names of three fossil species. To Prof. C. P. Gillette and Prof. Charles R. Jones of the Colorado Agricultural College, I am indebted for the loan of specimens representing nine species. To these sources of information have been added records made by the writer from specimens in his own collection, or sent to him at various times for determination. These last are acknowledged in connection with the several records.

There are a few species found in the eastern half of Kansas, and also in Nebraska, that do not appear to reach Colorado, but on the other hand some of the recorded species of *Okanagana* probably do not extend eastward of the mountainous regions of the state. Twenty-three species are here recorded, but only two of them, namely *Tibicen linnei* and *Tibicen canicularis*, are of the fauna of the Atlantic states. The majority of the others mentioned are confined

to the central parts of North America, only three or four of the species of *Okanagana* and *Platypedia* reaching California, and then often showing some variation from Colorado specimens.

Among the several species most likely to be collected in the future in Colorado and thus added to the present list are:

***Tibicen aurifera* (Say).**

Common in Kansas, and recorded from as far west as Seward, near the western part of that state at an elevation of 2,600 feet. This species was figured in the JOURNAL, N. Y. Entomological Society, March, 1916, Pl. 3, fig. 4.

***Tibicen resh* (Haldeman).**

Received from Elk Co., Kansas, 1,008 ft. (R. H. Beamer), and figured in JOURNAL, N. Y. Entomological Society, March, 1915, Pl. 1, fig. 3.

***Tibicen eugraphica* (Davis).**

A very common species in parts of New Mexico; we have a male from Albuquerque, Bernalillo Co., which is within 140 miles of the Colorado line. From 160 miles to the east we have seen eighty males and eleven females collected in Barber Co., Kansas, July 19-21, 1916, 1,468 ft. elevation, by Mr. R. H. Beamer. This species is usually found in dry situations. It was described and figured in the JOURNAL, N. Y. Entomological Society, March, 1916, Pl. 5, fig. 3.

***Tibicen vitripennis* (Say).**

Examined from both Nebraska and Kansas, so may possibly occur in Colorado. Figured in the JOURNAL, N. Y. Entomological Society, March, 1916, Pl. 6, fig. 3.

***Okanagana striatipes* (Haldeman).**

A more western species common in parts of Utah and Arizona, but likely to occur in Colorado as well. This species is considered in the JOURNAL, N. Y. Entomological Society, June-September, 1919, p. 215, and a figure is presented on the plate accompanying the present article.

In 1895 Prof. C. P. Gillette and C. F. Baker published a Preliminary List of the Hemiptera of Colorado, as Bulletin 31, Agricultural Experiment Station, State College of Colorado. They enumerated nine species, namely:

Cicada dorsata Say.

Cicada marginata Say [*Tibicen marginalis* Walker of this list].

Cicada tibicen Linn. [*Tibicen linnei* (S. & G.) of this list].

Proarna valvata Uhler.

Tibicen synodica (Say).

Tibicen rimosa (Say) [*Okanagana bella* Davis of this list].

Tibicen cruentifera Uhler.

Platypedia putnami (Uhler).

Melampsalta parvula (Say) [*M. calliope* (Walker) of this list].

The reasons for dropping *tibicen* Linn. as far as the fauna of the United States is concerned were given by Smith and Grossbeck, Entomological News, XVIII, 1907, and the other two changes are explained by the writer in the June-Sept., 1919, and June, 1920, numbers of the JOURNAL, N. Y. Entomological Society.

While there will ultimately be found just as many or even more species of Cicadas in Kansas than in Colorado, the following remarks on the latter state by Gillette and Baker in their introduction to the list already referred to, seem well justified: "Probably there is no state in the Union offering a richer field for the student of natural history than Colorado, whether it be in the line of minerology, paleontology, zoology or botany. Its broad stretch of arid plains crossed by streams of living water, its high mountain ranges, broad plateaus, innumerable gulches and deep canons, all combine to give it a most exceptional topography with a consequent diversified fauna and flora."

A very useful paper on the Cicadidae of Kansas, by P. B. Lawson, Kansas University Science Bulletin, Vol. XII, No. 2, March 15, 1920, was distributed in November, 1920. It contains descriptions of twenty-one species occurring in that state, also numerous figures of structural details. As eleven species of Cicadas have been found both in Kansas and Colorado, the paper will be helpful in considering those mentioned in the present list. There is, however, a considerable difference in the Cicada fauna of these two adjoining states, and it is always of interest to note the changes that take place in animal life as the one hundredth meridian is approached.

1. *Tibicen linnei* (Smith and Grossbeck).

Figured in JOURNAL, N. Y. Entomological Society, Sept-December, 1918, Pl. 7, fig. 1.

"Colorado (E. V. Beales)," male without exact locality or date label. Through the courtesy of Prof. Myron H. Swenk, I have also been able to examine a female of this species in the collection of the University of Nebraska, labeled "Colorado." It is to be regretted that the information is not more complete.

There is a male in the writer's collection from West Point, Nebraska, and Mr. R. A. Leussler has sent me nine *linnei* from Omaha, collected in October, 1917, and August, 1919. From Wakefield, Clay Co., Kansas, I have two males and a female collected by Mr. J. C. Warren. From the Kansas and Nebraska data it would appear that the Colorado records are no doubt correct.

2. ***Tibicen canicularis*** (Harris).

Figured in JOURNAL, N. Y. Entomological Society, March, 1916, Pl. 3, fig. 2, and Sept.-Dec., 1918, Pl. 7, fig. 2.

This species is recorded from Colorado in Mr. Van Duzee's Catalogue of the Hemiptera of America North of Mexico, 1917.

In his List of Hemiptera of the Region West of the Mississippi River, including those collected during the Hayden explorations of 1873, Bulletin of U. S. Geological and Geographical Survey of the Territories, vol. 1, p. 342, 1876, Uhler says: "From the mountains of Colorado. The specimen corresponds in size, structure, and markings with those from eastern Massachusetts and other parts of New England. New Jersey seems to be the region where it varies most in size and kind of markings."

In the writer's collection there are six specimens from Aweme, Manitoba (Criddle), and a male from Sioux County, western Nebraska, collected August 17, 1908 (C. H. Gable). In the collection of the University of Nebraska there are five additional specimens from the same county.

This species must not be confused with *Tibicen aurifera* (Say), which it resembles.

3. ***Tibicen marginalis*** (Walker).

Figured in JOURNAL, N. Y. Ento. Society, March, 1915, Pl. 2, fig. 1, and December, 1915, Pl. 18, fig. 2.

"Colorado," male (E. V. Beales), University of Nebraska. This is the only specimen so far examined from Colorado, but we have

numerous Kansas and Nebraska records, so the locality is no doubt correct.

This species does not as a rule inhabit as dry situations as *dorsata* and *dealbata*.

4. *Tibicen dealbata* (Davis).

Figured in JOURNAL, N. Y. Entomological Soc., Sept. 1915, Pl. 12, fig. 2.

This species was described in the JOURNAL, N. Y. Ent. Society, vol. 23, p. 162, Sept., 1915, and at that time was recorded from the following localities in Colorado, the dates of capture being in July, August and September: Denver; Platte Canyon, Jefferson Co.; Chimney Gulch, Golden; Pueblo, Pueblo Co.; Colorado Springs, and Durango, La Plata Co.

The following are additional records: Snyder, Morgan Co., Aug. 8, 1899, female, Univ. of Kansas; Ft. Lupton, Weld Co., male, collection Dr. E. D. Ball; Platte Canyon, Jefferson Co., Aug., 9,000 ft., four males (Oslar); Pueblo, July 31, 1907, female, and Aug., 1907, male (G. M. Hite), Univ. of Colorado; Pueblo, Aug. 9, 1920, male in vacant lot, captured by *Sphecius* wasp (Dr. Lutz), Am. Museum of Natural History; Nepesta, Pueblo Co., male, collection Dr. E. D. Ball; La Junta, Otero Co., July 22-23, 1919, male and two females (Rehn and Hebard). Mr. Morgan Hebard states that this species inhabits dry situations. La Junta, August 11-13, 1920, about 4,100 ft., male (Dr. Lutz), Am. Museum of Natural History.

Writing of this species from Foss, western Oklahoma, in August, 1916, Miss Anna Bennett says: "The cicadas have all disappeared except the white-sided ones. These are very numerous here this year. In fact they are almost a pest. They sing in the evening and early part of the night. In the morning they are usually rather stupid and sleepy and are in the short weeds and grass out from the trees for a few rods, but start up with a loud noise and are quite easily caught in a net or even in the hands. They always fly for the trees and often sing after they light for a short time." Miss Bennett sent me 302 specimens of *dealbata*, well justifying her statement that the "white-sided ones" were very numerous about Foss, Oklahoma, in 1916.

Dr. Raymond H. Beamer writes that he found this species associated with *dorsata* in Kansas.

5. *Tibicen dorsata* (Say).

Figured in JOURNAL, N. Y. Entomological Society, Sept., 1915, Pl. 12, fig. 1.

In the Bulletin of the U. S. Geological and Geographical Survey of the Territories, Vol. 1, p. 342, 1876, Uhler says: "This is the grandest and most beautiful of the large western species of *Cicada*. Its note is said to be loud, piercing, and sustained, and from the great strength of the base of the wings and their fasciculæ of muscles the species must be one of the most vigorous and rapid in flight. The specimens here noticed were collected in Colorado by Prof. C. Thomas."

Dr. Raymond H. Beamer, in an account of his collecting trip in Kansas in 1916, writes that *dorsata* was the most widely spread and abundant species taken. It was commonly found on low shrubs or weeds and grass, often on barren hill tops.

Colorado records are as follows: Laporte, Larimer County, female, September 12, 1906, Colorado Agricultural College; six miles west of Loveland, Larimer County, male, August 20 (W. Foster), University of Colorado; Ft. Collins, August 1, 1903, male, Colorado Agri. College; Collins, August 19, 1898, male, University of Nebraska; Ft. Sterling, Logan County, July 11, 1909, 4,000-4,100 ft., male, Acad. Nat. Sciences of Philadelphia; Ft. Lupton, July 25, 1900, two males, collection Dr. E. D. Ball; Ft. Lupton, July 25, 1900, male, Colorado Agri. College; Wray, Yuma County, July 13, 1899, male, University of Kansas; Wray, August 17, 1919, about 4,411 ft. on sunflowers, sagebush, etc., two males (Dr. Lutz), Am. Museum of Natural History; Rocky Ford, Otero County, August 7, 1900, female, collection Dr. E. D. Ball; La Junta, Otero County, August 11-13, 1920, about 4,100 ft. on arid hills, male (Dr. Lutz), Am. Museum of Natural History.

6. *Tibicen duryi* Davis.

Figured in JOURNAL, N. Y. Ento. Soc., Dec., 1917, Pl. 13, fig. 2.

Bondad, June 27, 1919, 6,100 ft., male (Dr. Lutz), Am. Museum of Natural History.

This species is very common at times in New Mexico, and will no doubt be found abundant in parts of Colorado as well. It is a beautiful insect, and is colored near the base of both pairs of wings bright

orange or orange and gray, and in this and other respects looks at first glance, especially when the wings are closed, much like some of the species of *Okanagana* among which it lives.

7. ***Tibicen bifidus*** (Davis).

Figured in JOURNAL, N. Y. Entomological Society, March, 1916, Pl. 4, figs. 3-4.

Fort Collins, June 28, 1900, three males, two females, collection Dr. E. D. Ball; Fort Collins, June 28, 1900, male and June 29, 1901, male and two females, Colorado Agri. College; Salida, Chaffee Co., 1885, male, University of Nebraska; Pueblo, June 15, 1900, female, collection Dr. E. D. Ball. The male type came from Clear Creek, Colorado.

8. ***Cacama valvata*** (Uhler).

Figured in JOURNAL, N. Y. Entomological Society, March, 1919, Pl. 13, fig. 1.

In Cicadas of the Genus *Cacama*, with Descriptions of Several New Species, JOURNAL, N. Y. Entomological Society, March, 1919, Colorado specimens are recorded from Pueblo, Carson City, Trinidad, Cañon City, Holly, Coolidge and Fort Collins, with dates of capture in June and July. In the collection of the Colorado Agricultural College there are additional specimens from Fort Collins, June 28, 1900, male and female, and Pueblo, June 15, 1900, male and female.

This species, according to Mr. John Woodgate of Jemez Springs, New Mexico, is often found on bush-cactus.

9. ***Proarna venosa*** (Uhler). Plate V, fig. 1.

Cañon City, July 2, 1885, two males, one female, and July 3, male, collection University of Nebraska.

In July, 1917, Dr. H. H. Knight collected this small species very commonly "on desert grass" at Aden, New Mexico. At Foss, Oklahoma, July, 1916, Miss Anna Bennett reported finding a male on a thistle near the roots of a cottonwood "singing as loud as possible." Dr. Raymond H. Beamer has taken this species in Kansas in grass and weeds, where they were located by their song which was low through shrill.

10. *Okanagana cruentifera* (Uhler).

Figured in JOURNAL, N. Y. Entomological Society, June-Sept., 1919, Pl. 19, fig. 2.

Bondad, June 27, 1919, 6,100 ft., three females (Dr. Lutz). American Museum of Natural History.

11. *Okanagana magnifica* Davis.

Figured in JOURNAL, N. Y. Entomological Society, June-Sept., 1919, Pl. 19, fig. 1.

In the original description a female is reported from Nucla, Colorado, Sept. 7, 1907 (C. T. Truelt), collection U. S. National Museum. The following localities can now be added: Bondad, June 27, 1919, 6,100 ft., three males, five females, found among "sagebush, oak, sabina, pinyon, cottonwood, etc." (Dr. Lutz), Am. Museum of Natural History; Mesa Verde, July 3-7, 1919, 7,300 ft., six males, three females, found among "pinyon, sabina, sagebush, etc." (Dr. Lutz), Am. Museum of Natural History. With these last mentioned specimens are two pupa skins, each about 30 millimeters in length, with broad stripes of a chocolate brown color on the hind margins of the abdominal segments. This is the largest species of *Okanagana* so far described.

12. *Okanagana schaefferi* Davis.

Figured in JOURNAL, N. Y. Entomological Society, March, 1915, Pl. 3, fig. 4.

The only two records for this species in the state, is the published one of a male from Salida, June, 1885, collection, University of Nebraska, and a male recently found in the collection of the U. S. National Museum, labeled simply "Colorado."

Mr. George P. Engelhardt has informed me that the song of this species closely resembles the whirring noise produced by a rattlesnake, and that on one occasion in June, 1917, in Washington County, Utah, he came very nearly being bitten by a snake while searching in a small bush for the supposed Cicada. Mr. J. Duncan Putnam in his "Remarks on the Habits of Several Western Cicadae," Proceedings, Davenport Academy of Natural Sciences, March, 1881, records his experience with a species of Cicada belonging to the present genus *Okanagana*: "The male makes a rattling noise, exceedingly like that of a rattlesnake. This resemblance was so close

that one day in 1873, in the Shoshone Mountains, I was attracted by a noise which I took to be one of the insects, and stooped to pick it up, when I suddenly discovered a huge rattlesnake in its stead."

13. *Okanagana bella* Davis.

Figured in JOURNAL, N. Y. Entomological Society, June-Sept., 1919, Pl. 20, fig. 1.

In the original description this species was recorded from Livermore, Ft. Collins, Estes Park, Golden, Russell, Creede and Durango in Colorado, with dates of capture from June 24 to August 1. To these records may be added the following: Lily, Moffat Co., June 30, male and two females (J. W. Frey), Am. Museum of Natural History received from University of Colorado; Fort Collins, June 29, 1901, two males and two females, Colorado Agri. College; Colorado Springs, El Paso Co., male and female (H. B. Baker), University of Michigan; The South Fork, Rio Grande, June 17, 1919, 8,500 ft., two females, "cold at night, about 42°" (Dr. Lutz), Am. Museum of Natural History; Wolf-Fall Creek, Mineral Co., June 20, 1919, 7,900 ft., male (Dr. Lutz), Am. Museum of Natural History; Pagosa Springs, June 21-23, 1919, 7,500 ft., two males (Dr. Lutz), Am. Museum of Natural History. In the Academy of Natural Sciences, Philadelphia, there are fourteen males from Sedalia, Colorado, and in the writer's collection two males and a female from Breckenridge, 9,000 ft., July (Osler). In these sixteen specimens, as in most other males from Colorado, the valve is pale in color.

The song of this species is described by Dr. Lutz, as having the clicks run close together, and continued for a long while.

14. *Okanagana synodica* (Say). Plate V, fig. 2.

Thomas Say says in the original description: "Dr. James and Mr. Peale observed this species in great numbers in one locality, at the base of the Rocky Mountains, but it did not occur elsewhere."

Uhler says in the Bulletin of the U. S. Geological and Geographical Survey of the Territories, Vol. 1, p. 341, 1876: "This pretty little species seems to be common in Eastern Colorado. The present specimens were collected in that region by Mr. B. H. Smith and by Prof. C. Thomas."

Mr. Joseph Duncan Putnam in his "Remarks on the Habits of

Several Western Cicadæ," already referred to, records that "*Cicada synodica* Say, was quite common on the grassy plains near Denver and Boulder, in Colorado, in June, 1872. The male makes a tolerably loud rattling noise."

Gillette and Baker in their Preliminary List of the Hemiptera of Colorado, record the species from near Cañon City, August 11 (Uhler); Southern Colorado, June to July (Carpenter); Fort Collins, June 21 (Baker) and July 5 (Gillette); Manitou Park (Snow).

In the JOURNAL, N. Y. Entomological Society, June–Sept., 1919, the species is recorded from Denver, Ft. Collins, Pueblo, Lamar and Salida, with the dates of capture in May, June and July.

To the above records may be added: Walsenburg, June 14, 1919, 6,200 ft., seven males, one female, "chiefly on grass and low weeds" (Dr. Lutz), Am. Museum of Natural History; Boulder, female (Prof. Cockerell); Clear Creek Canyon, June 24, 1920, 7,500 ft., five males (Osler).

15. *Okanagana utahensis* Davis.

Figured in JOURNAL, N. Y. Entomological Society, June–Sept., 1919, Pl. 20, fig. 4.

Mesa Verde, Montezuma Co., July 3–7, 1919, 6,600 ft, male, and Bondad, June 27, 1919, 6,100 ft., male. Both specimens in the Am. Museum of Natural History and collected by Dr. Lutz, who states that the song is continuous. This species has not before been reported from Colorado.

16. *Okanagana hesperia* (Uhler). Plate V, fig. 4.

Denver City, Colorado, is the type locality given by Uhler in the original description.

In the JOURNAL, N. Y. Entomological Society, June–Sept., 1919, this species is recorded from Denver, Golden, Fort Collins, Platte Canyon, La Junta, and Trinidad. The dates of capture are from June 10 to July 17.

To the above records may be added: Colorado Springs, male (H. B. Baker) collection University of Michigan; La Junta, July 22–23, 1919, female (Rehn and Hebard); Animas, June 26, 1919, 6,600 ft., two males, and Bondad, June 27, 1919, 6,100 ft., "song continuous" (Dr. Lutz), Am. Museum of Natural History.

17. *Platypedia mohavensis* Davis.

Figured in JOURNAL, N. Y. Entomological Society, June, 1920, Pl. 5, fig. 1.

The only Colorado record for this species is the one already published in the original description, namely Bondad, June 27, 1919, male and three females (Dr. Lutz), Am. Museum of Natural History.

18. *Platypedia putnami* (Uhler).

Figured in JOURNAL, N. Y. Entomological Society, June, 1920, Pl. 5, fig. 3.

In the original description in 1877, Uhler states that the types were "collected in the vicinity of Clear Creek, Colorado, by Mr. I. Duncan Putnam." In the Proceedings of the Davenport Academy of Natural Sciences, Vol. 3, March, 1881, there are some "Remarks on the Habits of Several Western Cicadae," by Mr. Putnam, made at the meeting of January 31, 1879, as follows: "*Cicada putnami* Uhler (Vol. 2, Plate 4, figs. 3 and 4) I have collected only upon one occasion, July 2, 1872. It occurred in considerable numbers on some small aspen trees growing close to the water of Clear Creek, between Floyd's Hill and Idaho Springs, Colorado. The male makes a very faint chirp, differing entirely from any other Cicada I have ever heard. This species does not appear to have been collected since."

Specimens from the following localities are recorded in the JOURNAL, N. Y. Entomological Society, for June, 1920: Fort Collins, Boulder, Bear Creek in Jefferson Co., Chimney Gulch, Golden, Platte Canyon, Manitou, Canon City, Alamosa, Mesa Verde in Montezuma Co., Durango, Bondad, Pagosa Springs, and Starkville. The dates of capture are from May 13, 1901, at Chimney Gulch (Dyar and Caudell), to July 3-7, 1919, at Mesa Verde at an elevation of about 7,300 ft.

All observers report the notes of the several species of *Platypedia* as a series of short *clicks*, and Dr. Lutz states that those he collected at Starkville produced a "clicking sound; about eight clicks, rapid at first, but slowing."

Additional records are as follows: Fort Collins, June 16, 1899, three females and June 22, 1899, female, collection Colorado Agri. College, Colorado Springs male and female (H. B. Baker), collection University of Michigan.

19. *Platypedia minor* Uhler.

Figured in the JOURNAL, N. Y. Entomological Society, June, 1920, Pl. 5, fig. 10.

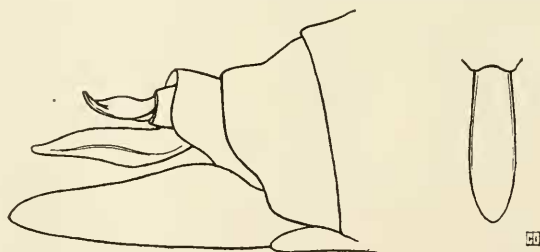
The only specimens I have seen from Colorado have already been recorded, and consist of the fifty-seven individuals collected at Glenwood Springs, June, 1919, by Mr. Osler. The type locality for this species is San Mateo, California, but the Colorado specimens appear to be the same, though their distribution is unusual.

20. *Platypedia latipennis* new species. Plate V, fig. 5.

Type male, Douglas Spring, Routt Co., Colorado, June 26 (J. W. Frey). Collection American Museum of Natural History, received from University of Colorado.

The uncus resembles in shape that of *Platypedia mohavensis*, but the fore wings are broader and the front of the head not as prominent as in that species. The fore wings in form resemble those of *barbata* and *minor*, and have also a rather broad basal cell, but it is not nearly as hairy as either of those species, and the uncus is differently shaped.

Front of the head not prominent, median sulcus well defined and broadening on the lower part of the face. The whitish hairs on the body are about



PLATYPEDIA LATIPENNIS

as in *putnami*; the upper surface is nearly smooth except on the head and about the mesonotal $\times$, while beneath the hairs are long and numerous. The fore wings have eight apical cells, are very broad, and have the costal nerve rather suddenly bent near the end of the radial cell. When viewed from in front the costal nerve is seen to be wavy, suggesting an approach to *Neoplatypedia*. The uncus is slightly arched at the top, with the extremity rather flat and rounded; beneath it is somewhat deepened near the basal third; not as much so as in *putnami*, but more so than in *mohavensis*.

General color blue black with the lighter marks brilliant orange-red as in *putnami*, which indeed it strongly resembles in coloring, and for which it might be taken if it were not for structural characters. Fore femora entirely black

except the extremities, which are brilliant orange-red; middle and hind femora black above, orange-red beneath. The hind margin of the pronotum or collar is conspicuously orange-red, as are the membranes at the base of both pairs of wings.

MEASUREMENTS IN MILLIMETERS.

	Male Type.
Length of body	10.5
Width of head across eyes	5
Expanse of fore wings	42
Length of valve	4

Only the type has been examined, but the broad fore wings, and the shape of the uncus readily separate it from the other described species of *Platypedia*. This insect should be considered just after *barbata* in the Key to the Genera and Species of *Platypedia* and *Neoplatypedia* published in the JOURNAL, N. Y. Entomological Society for June, 1920.

21. *Neoplatypedia constricta* Davis.

Figured in JOURNAL, N. Y. Entomological Society, June, 1920. Plate 5, fig. 13.

The only Colorado specimens so far examined are the fifteen males and twenty-two females collected by Dr. Lutz at Bondad, June 27, 1919, and now in the collection of the Am. Museum of Natural History. It was noted when the insects were collected that the song was a *zip, zip, zip* continued for a long time.

22. *Melampsalta calliope* (Walker), 1850.

Cicada parvula Say, 1825; name preoccupied.

Cicada pallescens Germar, 1830; name preoccupied.

Figured in JOURNAL, N. Y. Entomological Society, June, 1920. Pl. 5, figs. 14 and 15.

The only Colorado specimens so far examined are a male and a female in the U. S. National Museum, collected at Granada, Prowers Co., in the eastern part of the state. It is a common species in parts of Kansas and Nebraska.

23. *Melampsalta kansa* Davis.

Figured in the JOURNAL, N. Y. Entomological Society, June 1920. Pl. 5, fig. 17.

In the paper on the North Am. Cicadas belonging to the Genera

Platypedia and Melampsalta, published in this JOURNAL for June, 1920, five males collected by the American Museum Expedition, in June, 1919, are recorded from Regnier and Lamar. To these may now be added one male and three females from Lamar, June 17, 1900, recently sent to me for examination from the Colorado Agricultural College. The entirely green Cicada from near the Rocky mountains, which Thomas Say wrote about in 1825 in connection with his *Cicada parvula*, is supposed to have belonged to this species.

FOSSIL SPECIES.

***Cicada grandiosa* Scudder.**

This species was described and wing figured in the Bulletin of the U. S. Geological Survey, No. 93, 1892, in an article entitled "Some Insects of Special Interest from Florissant and other Points in the Territories of Colorado and Utah."

In the Bulletin, American Museum of Natural History, Vol. 30, 1911, p. 76, Prof. T. D. A. Cockerell comments upon this insect as follows: "This species was based by Scudder on a hind wing, which was remarkable for its large size, and supposed to differ from true *Cicada* in several venational characters. The wing, however, agrees very nearly with that of the living American *Cicada marginata* [*marginalis* Walker], and I believe represents a quite typical *Cicada*. In March, 1911, my wife and I found at the south end of Fossil Stump Hill, Florissant, a rather poorly preserved upper wing of *Cicada*, showing all the central area, including the forking of the radius and cubitus, the median cell and the two large discal cells above it. All of this is perfectly typical for *Cicada*, and might almost have come from a wing of *C. marginata*. The large cell in the forks of the media has its side on the cell (median) below 12 mm. and that on the cell above 10 mm. As the proportions agree exactly with the upper wing which should go with Scudder's hind wing, it seems safe to assume that they belong to the same species."

***Lithocicada perita* Cockerell.**

Described and figured in the Bulletin Am. Museum of Natural History, vol. 22, 1906, p. 457, from a plainly represented anterior wing 23 mm. in length and 10½ broad, showing almost complete venation. The costal margin is very much bent near the apex of



(CICADIDAE).